

Figure S4. Frequency distribution of log-likelihoods for fitting the randomly-categorized rate model (RRM) into the data. Frequencies were generated by fitting 500 RRM to the data. RRM were constructed by randomly categorizing the 16 localities in U.S. and Canada into the four North American flyways. In the majority (8/11) of data sets, the likelihood scores showed that the 4-flyway rate model (4-FRM; the localities were categorized correctly according to which flyway they were sampled from) fitted significantly ($p < 0.05$) better than the RRM. The log likelihood of the 4-FRM and its p -value from the distribution is shown by the arrow.

